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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/862,788	05/18/2001	Mark Ahmadian	AFB00500	8998
7590 11/02/2004			EXAMINER	
Thomas C. Stover ESC/JAZ 40 Wright Street Hanscom AFB, MA 01731-2903			KIM, AHSHIK	
			ART UNIT	PAPER NUMBER
			2876	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/862,788	<b>Applicant(s)</b> AHMADJIAN ET AL.	
	<b>Examiner</b> Ahshik Kim	<b>Art Unit</b> 2876	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07/30/04 (Amendment).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Amendment***

1. Receipt is acknowledged of the amendment filed on June 11, 2004, and on July 30, 2004.

In the amendments claim 16 was newly added. Currently claims 1-16 remain for examination.

### ***Claim Objections***

2. Claim 1 is objected to because of the following informalities:

Re claim 1: status of claim 1 was "previously presented", however, current claim 1 is not same as its previous version. Applicant is respectfully suggested to review claim 1.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5, 7-9, 11, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill, Jr. et al. (US 5,850,285, previously cited, hereinafter "Hill") in view of Hertel et al. (US 6,118,531, hereinafter "Hertel").

Re claims 1, 3, 7, 11, and 14-16, Hill teaches a rocket/aircraft exhaust plume detecting system (See abstract) comprising an electro-optical components 10 and 16, a filter 18 and a spectrometer 20 which detects spectral reference of the emission (col. 5, lines 35+). As further disclosed in the abstract, a particular wavelength (i.e., 0.2 – 200 microns) can be detected and captured. Hill further teaches that the system detects UV and IR frequencies (col. 3, lines 21+). Hill additionally discloses using amplifier (col. 4, line 29 – col. 5, line 5; col. 5, lines 45-57; col. 6, lines 34-46), which stimulates spectral reference of the emission, which in turn, would result in reducing noise (or background radiation). The embodiment discloses an air-to-air or surface-to-air detection schemes (col. 1, lines 15+). In case of air-to-air detection, it is inevitable that the detecting apparatus is installed in the aircraft (or other flying object).

Hill fails to specifically teach or fairly suggest the apparatus utilizes a lock-in amplifier.

Hertel discloses a method for identifying the particles contained in a gaseous or liquid or carrier medium (see abstract). The apparatus further comprises a lock-in amplifier (col. 4, lines 28-56).

In view of Hertel's teaching, it would have been obvious to an ordinary skill in the art at the time the invention was made to employ well-known lock-in amplifier to the teachings of Hill

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in order to collect/recover signals in noisy background. Lock-in amplifiers are commonly used to measure relatively clean signal when noise in the background is not to be rectified with the signal. Accordingly, by incorporating lock-in amplifier, the noise-related errors can be significantly reduced. Such modification – incorporating lock-in amplifier would have been an obvious expedient, well within the ordinary skill in the art.

Re claim 2, detectable wavelength of emission plume includes CO<sub>2</sub>, CO, NO<sub>2</sub>, H<sub>2</sub>O, and other atomic or ionic species (col. 5, lines 6+; col. 5, lines 22+).

Re claim 4, a use of a narrow band filter (col. 2, lines 54+) and a radiometric component (col. 4, lines 21) is also disclosed.

Re claims 5 and 13, Hill also discloses that the device is able to distinguish rocket/missile plume from a non-threatening or natural objects such as flair or cloud (col. 1, lines 45+).

Re claims 8 and 9, Although Hill does not use the term photometer, a detector/photomultiplier 22 measures the luminescence of an exhaust plume as shown in figure 2 (col. 3, lines 45-47).

6. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill, Jr. et al. (US 5,850,285, previously cited) as modified by Hertel et al. (US 6,118,531) as applied to claim 1 above, and further in view of Hasson (US 5,625,452, previously cited, hereinafter “Hasson”). The teachings of Hill as modified by Hertel have been discussed above.

Hill/Hertel fails to specifically teach or fairly suggest the apparatus detects the emission wavelengths of Na or K.

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Hasson discloses a target acquisition system 10 including through clouds (see figure 3) utilizing target's electromagnetic spectrum. As shown in figure 3, the system can also be installed in an airplane 102 (col. 2, lines 5+; col. 5, lines 59+). Hasson further teaches that the system detects emission lines of Sodium (Na) and Potassium (K) by atomic line filters (col. 4, lines 53+).

In view of Hasson's teaching, it would have been obvious to an ordinary skill in the art at the time the invention was made to increase the spectrum for other elements such as Sodium and Potassium. Sodium and Potassium are well known indicators for identifying a source of radiation. Accordingly, one ordinary skill in the art would enhance the detection system by modifying the apparatus to detect the presence of the elements.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hill, Jr. et al. (US 5,850,285, previously cited) as modified by Hertel et al. (US 6,118,531) as applied to claim 1 above, and further in view of Houlberg (US 6,072,571, hereinafter "Houlberg") The teachings of Hill as modified by Hertel have been discussed above.

Hill/Hertel fail to specifically teach or fairly suggest of utilizing GPS system to find the coordinate of the rocket/missile.

Houlberg teaches a system for tracking a target, which tracks a flight path of an object such as a missile and satellite (See abstract; col. 3, line 55 – col. 4, line 6) comprising the global positioning system 28 (col. 4, lines 46+).

In view of Houlberg's teaching, it would have been obvious to an ordinary skill in the art at the time the invention was made to incorporate an old and well-known GPS system to the

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teachings of Hill/Hertel in order to find the coordinates of the missile/rocket. GPS system is old and well known to one of ordinary skill in the art to track satellites, aircrafts and other objects, which warrants tracking. Accordingly, detecting and tracking airborne objects such as missiles and rockets are crucially important in testing or real environment. By accommodating GPS system to Hill/Hertel, a flying object can be identified, and the current location and the flight path of the object can be anticipated, and thus an obvious expedient.

### ***Response to Arguments***

8. Applicant's amended claims and remarks filed on June 11, 2004, and on July 30, 2004 have been carefully considered. However, as indicated in the above rejection, it is the Examiner's view that previously cited references teach on the claimed invention of the instant application.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the primary reference to Hill and the secondary references to Hassoon, Hertel and Houlberg are directed at a plume detection system. Elements relied on the secondary references (i.e., Potassium and Sodium detection, and GPS technology), in the Examiner's opinion, can certainly be adopted to the primary reference by one ordinary skill in the art.

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The amended claims and remarks describing these elements have been fully considered, but they are not persuasive, and therefore, the Examiner has made this Office Action final.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ahshik Kim whose telephone number is (571)272-2393. The examiner can normally be reached between the hours of 6:00AM to 3:00PM Monday thru Friday. The fax number directly to the Examiner is (571)273-2393.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee, can be reached on (571)272-2398. The fax phone number for this Group is (703)872-9306.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [ahshik.kim@uspto.gov].

*All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly*



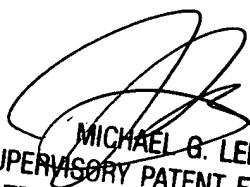
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*set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.*

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Ahshik Kim  
Patent Examiner  
Art Unit 2876  
October 25, 2004



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